

Date: Thursday, 12/13/2007 2:39:08 PM  
User: Kim Johnston

# Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : TOW RING
Job Number : 36332	
Estimate Number : 10396	
P.O. Number :	Part Number : D2968041
This Issue : 12/13/2007 S.O. No. :	Drawing Number : D2968 REV C
Prsht Rev. : NC	Project Number : N/A
First Issue : 1 / Type : MACHINED PARTS	Drawing Revision : C
Previous Run : 33287	Material :
Written By :	Due Date : 1/15/2008 Qty: 40 Um: Each
Checked & Approved By : <u>02.12.13</u>	
Comment : Est: C 03.04.11 Reformat; Incorporated D2968-1/-5 KJ/RF	
est D 07.07.06 rev C dwg EC	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	36332A	STEM
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Comment: Sub-Component STEM  
D2968-1 B 036332 A

FC 08/02/13 (40)

2.0	36332B	RING
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Comment: Sub-Component RING  
D2968-5 B 036332 B

FC 08/02/13 (40)

3.0	LARGE FAB 1	LARGE FABRICATION RESOURCE 1
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Comment: LARGE FABRICATION RESOURCE 1  
Weld D2968-1 & D2968-5 as per Dwg D2968 & QSI 004 using 4130 welding rod Identify as D2968-041  
Batch: m19317

FC 08/07/13 (40)

4.0	QC9	VISUAL WELDING INSPECTION
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Comment: VISUAL WELDING INSPECTION

PD 08-02-13 (40)

5.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

counts  
08/02/13 (40)

6.0	OUTSIDE SERV.30	OUTSIDE SERVICES-MACH
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Comment: Sub-Contracting PURCHASING  
Issue P/O: 5715  
Description: D2968-041 to heat treat to ultimate tensile strength  
125ksi as per Dwg D2968  
Conformity sheet required

C208102114 (40)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 12/13/2007 2:39:08 PM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: TOW RING

Job Number: 36332

Part Number: D2968041

Job Number:



Seq. #:

Machine Or Operation:

Description:

Issue P/O: 5714

Cad Plate per QQ-P-416F Class I Type II

Conformity sheet required

C208/02/14

(40)

7.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

8/3/18 (40)

8.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT CAD PLATE

5 08/03/19 (x40) counter

9.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.2) as per QSI 005 4.3

\*\*\*DO NOT POWDER COAT THREADS\*\*\*

M 107005 (40x) M-R 08/03/24

10.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT

BL 08-03-24 (40)

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: 57464

8/3/25 (40)

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/03/06 (40)

Job Completion



u 08-03-26

**Dart Aerospace Ltd**

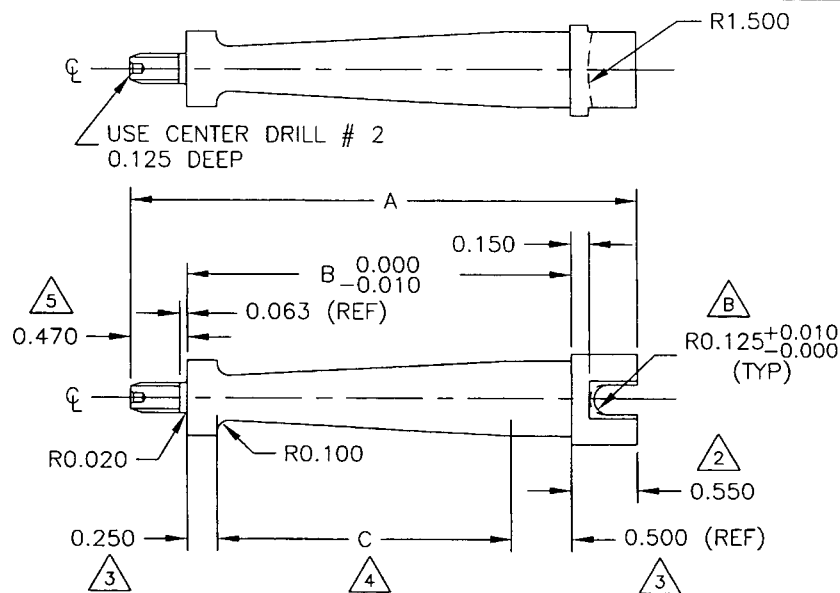
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



PART NUMBER	A	B	C
D2968-1	5.040	4.020	3.270
D2968-3	4.200	3.180	2.430

#### D2968-1/-3 STEM

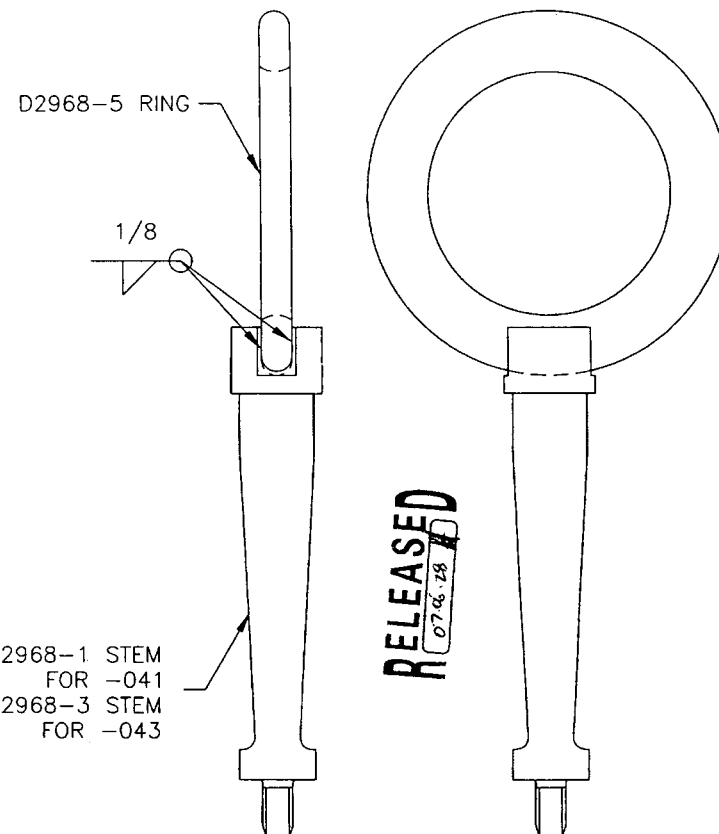
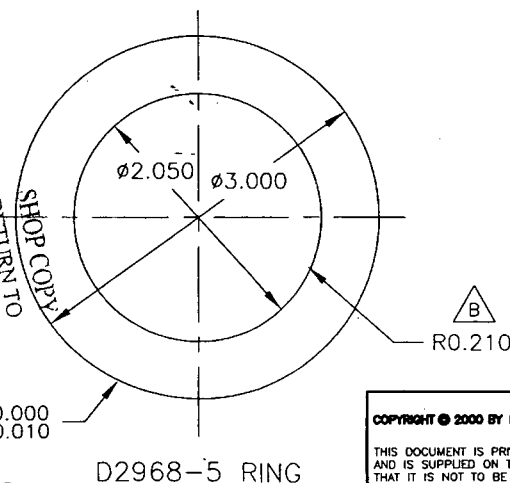
#### D2968-1 AND D2968-3 STEM:

- 1) MATERIAL: AISI 4130N ROUND BAR PER MIL-S-6758  
OR AMS 6348/6370/6528  
(REF DART SPEC M4130N-RX.XXX)
- 2)  $\phi 0.750$  O.D.
- 3)  $\phi 0.625$  O.D.
- 4) MACHINE UNIFORM TAPER FROM  $\phi 0.363$  O.D.  
TO  $\phi 0.625$  O.D.
- 5) 1/4-28 UNF THREAD WITH 0.063 GRIP
- 6) MACHINE ALL INSIDE EDGES WITH A 0.010 RADIUS  
UNLESS OTHERWISE INDICATED
- 7) ALL DIMENSIONS ARE IN INCHES
- 8) TOLERANCES ARE PER DART QSI 018 UNLESS  
OTHERWISE NOTED

#### D2968-5 RING:

- 9) MATERIAL: AISI 4130N TUBING PER MIL-T-6736  
OR AMS 6360/6361/6362/6371/6373/6374  
(REF DART SPEC M4130NT3000W500)
- 10) ALL DIMENSIONS ARE IN INCHES
- 11) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

NO. 36332  
WORK ORDER  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
ENGINEERING  
RETURN TO  
SHOP COPY



#### D2968-041 AND D2968-043 TOW RING:

- 12) WELD PER QSI 004 ON ALL EDGES BETWEEN STEM AND RING
- 13) HEAT TREAT TO MIN ULTIMATE TENSILE STRENGTH OF 125 KSI
- 14) FINISH: CAD PLATE ENTIRE ASSEMBLY PER  
QQ-P-416F CLASS I TYPE II  
POWDER COAT WHITE (REF 4.3.5.2) PER DART  
QSI 005 4.3 (EXCEPT THREADS)

C	07.04.17	2.050 WAS 2.000, UPDATE NOTES
B	00.05.31	R0.125 AND R0.210 WERE 0.060 x 45°
A	00.03.07	NEW ISSUE
DESIGN	✓	DRAWN BY
CHECKED	✓	APPROVED
DATE	07.04.17	TITLE
		TOW RING

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DART AEROSPACE LTD.

**DART**

DART AEROSPACE LTD.  
MARKESBURY, ONTARIO, CANADA

REV. C

SHEET 1 OF 1

SCALE

1:1



**VAC AERO**  
INTERNATIONAL INC.

**RELEASE NOTE**

GST No. : R105468102

OAK 95817-1



HEAD OFFICE  
1371 SPEERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
TEL: (905) 827-4171 FAX: (905) 827-7489



2009 WYECROFT ROAD, UNIT B  
OAKVILLE, ONTARIO  
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QUEBEC DIVISION  
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC  
CANADA H4S 1C5  
TEL: (514) 334-4240 FAX: (514) 334-6269

03/04/2008

MM / DD / YYYY

PAGE : 1

BILL TO: 1DAR01  
DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

SHIP TO: ~~MANCO DOMPLEX~~ Dart Aerospace Ltd.  
~~4660 HICKMORE~~ 1270 Aberdeen St.  
~~ST. LAURENT QC~~ Hawkesbury, ON  
~~H4T 1K2~~ K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
03/04/2008		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
5715		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
D2741	B 36343 BLADE	EA	40	40	<div data-bbox="1031 968 1583 1170"> <p><b>100% HARDNESS TESTED</b> 40 pcs. 37/38 HRC</p> </div>
	Process Specifications: Procedure: 4161 HARDENED PER DWG. D2741 TO 152 KSI MINIMUM 100% HARDNESS TESTED PER ASTM E-18, HRC: 34-40 MATERIAL: 4130				
	SHIP BACK TO DART AEROSPACE				
D2968-041	TOW RING	EA	40	40	<div data-bbox="990 1319 1542 1521"> <p><b>100% HARDNESS TESTED</b> 40 pcs. 29/30 HRC</p> </div>
	Process Specifications: Procedure: 4047 HEAT TREATED TO 125 KSI MIN. 100% HARDNESS TESTED PER ASSTM E-18, HRC 27-32.5 MATERIAL: 4130				
	SHIP TO MANCO DOMPLEX				

I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

*Sharon Robinson*  
Authorized Q.C. Inspector



VACUUM BRAZING · HEAT TREATING · SPECIAL PROCESSING · FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL · PLASMA AND OTHER COATINGS



HEAT  
TREATING

**MANCO**  
**DOMPLEX**

8895 Crescent 3  
Anjou (Québec) H1J 1B6  
Tél.: (514) 355-7867  
Fax: (514) 355-8750

**CERTIFICAT DE CONFORMITÉ**  
**CERTIFICATE OF COMPLIANCE**

# 423

Dart Aerospace LTD  
Client / Customer

105716  
Votre # de commande / Your purchase order #

D2968-041 B36332  
# de la pièce / part #

R109790  
Notre # de bon de livraison / Our packing slip #

Inspecteur / Inspector	<u>Renaud</u>	Date, équipe / Date, shift	<u>13/03/08</u>
Placage / Plating	<u>QPL-416F Type # C1</u>		
Quantité totale / Total quantity	<u>40</u>	Quantité inspectée / Inspected quantity	<u>40</u>
Adhésion / Adhesion	<u>Good</u>		
Épaisseur / Thickness	L.C.D.	H.C.D.	Moy. / aver. <u>0.0005</u>
Coulisses, taches / Leach, spots	<u>non</u>	Rugosité / Roughness	<u>Non</u>
Quantité approuvée / Approved quantity	<u>40</u>	Quantité rejetée / Rejected quantity	<u>                    </u>

Commentaires / Comments

Nous certifions que les pièces énumérées ci-dessus ont été faites en conformité avec vos dessins et spécifications et rencontrent les exigences contenues dans ces dessins et/ou spécifications.

We hereby certify that the parts listed above have been made in accordance with your drawings and specifications and are correct to the requirements contained in those drawings and/or specifications.

Signé au nom de  
Signed on behalf of

**MANCO**  
**DOMPLEX**